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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/674,665	05/14/2001	Mordechai Segal	TI-30245	1323

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TEXAS INSTRUMENTS INCORPORATED
P O BOX 655474, M/S 3999
DALLAS, TX 75265

EXAMINER	
LUGO, DAVID B	

ART UNIT	PAPER NUMBER
2611	

DATE MAILED: 05/01/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/674,665	SEGAL ET AL.	
	Examiner	Art Unit	
	David B. Lugo	2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *17 February 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *23-30* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *23-30* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed 2/17/06 have been fully considered but they are not persuasive. Regarding claims 23 and 27, Applicant traverses the rejection on the grounds that Benelli states that the coder is designed to ensure that information on each channel differs from each other, citing a portion of the article on page 1530, in the third paragraph under the Introduction in support of that statement, and further states that, in contrast, claims 23 and 27 recite reproducing a symbol or FEC block represented by a segment of an input data stream a pre-selected number of times, which is patentably distinguishable from Benelli. However, the portion of the Benelli article actually relied upon in the previous Office action corresponds with Figure 1, which is an example of the general structure of a classical diversity scheme. That is, Figure 1 does not make use of both coders C and C1 which are used to provide the "different" coded information on each channel as is done in the system shown in Figure 2. Rather, the classical diversity scheme is described as follows: "One trait common to all of the diversity schemes is that the same message is transmitted over $m \geq 2$ different channels or time intervals. Thereafter, the signals received from the m channels are combined in the receiver so that the overall error probability may be reduced. A typical example of a diversity communication system is schematically illustrated in Fig. 1." (page 1530, left hand column, second paragraph under Introduction). Therefore, the figure actually relied upon in the rejection clearly shows that the same message is transmitted over all the channels, and thus the claims are not patentably distinguishable over Benelli in combination with Kaewell.

Regarding claims 24 and 28, Applicant argues the references do not disclose the soft-combining as claimed. In response, it is noted that based on the language of the claim, at minimum, the claimed soft-combining requires only one of mean squared estimation, identification of burst noise within a data packet, weighted combining, and selective combining to be present in a reference to meet the claimed limitation of soft-combining. The claim language is interpreted as a form of an alternative limitation (see MPEP 2173.05(h)), and does not require that all of the limitations be present in an anticipating reference. Kaewell, Jr. is considered to teach diversity combining using a maximal ratio combiner, which is a type of weighted combining. Kaewell also teaches a switching combiner which performs selective combining, but as noted above, only one of the types of soft-combining is required. Accordingly, Benelli in combination with Kaewell is considered to meet the limitations of claims 24 and 28.

Regarding claims 25 and 29, Applicant argues that Lathrop does not teach the limitations of claims 25 and 29. The Examiner respectfully disagrees, as Lathrop disclose using a channel for retransmission, and accordingly, Lathrop in combination with Benelli and Kaewell is considered to teach the limitations of claims 25 and 29.

The rejection of claims 23-30 is maintained, and is restated below.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 23, 24, 27 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over the publication by Benelli entitled "Two new coding techniques for diversity communications systems" in view of Kaewell, Jr. et al. U.S. Patent 5,402,451.

Regarding claims 23 and 27, Benelli disclose a diversity system in Figure 1 (p. 1531) comprising a 1:N rate encoder (coder) coupled to an input data stream configured to reproduce a symbol N times, a transmission arrangement configured to use a plurality of outputs to transmit each symbol using a distinct channel (channels 1-m), and a receiver coupled to the outputs of the transmission arrangement for combining the signals via a signal combiner to output an estimate of the symbol.

Benelli does not expressly state the signal combiner uses soft-combining of the signals.

Kaewell, Jr. et al. disclose a diversity combiner system where soft-combining of the signals is performed, as in a maximal ratio combiner (see abstract).

It would have been obvious to one of ordinary skill in the art to use the soft-combining of signals as taught by Kaewell, Jr. et al. in the combiner of Benelli because such combining allows for the best set of diversity combining weights to be determined for different operating environments (col. 1, lines 51-53).

Regarding claims 24 and 28, Benelli discloses that the soft-combining includes weighted combining (col., 1, lines 51-53; col. 2, lines 52-56).

4. Claims 25 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Benelli in view of Kaewell, Jr. et al. as applied to claims 23 and 27 above, and further in view of Lathrop U.S. Patent 5,701,427.

Regarding claims 25 and 29, Benelli in combination with Kaewell, Jr. et al. disclose a communication arrangement as described above, but do not expressly disclose transmitting an original message using one of the channels and performing retransmission using a remaining channel.

Lathrop discloses a communication arrangement where an information message is transmitted over a channel on a communications link 12, and a second retransmit channel is used to transmit retransmission information (col. 7, lines 22-33).

It would have been obvious to one of ordinary skill in the art to use the teaching of Lathrop of a channel for retransmission that is separate from that used to transmit an original message in order to allow for retransmission of data not accurately received without interrupting the transmission of the original message.

5. Claims 26 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Benelli in view of Kaewell, Jr. et al. as applied to claims 23 and 27 above, and further in view of Lin et al. U.S. Patent 5,703,911.

Regarding claims 26 and 30, Benelli in combination with Kaewell, Jr. et al. disclose a communication arrangement as described above, but do not expressly disclose that the transmission channels are used to transmit information bits using a delay-encoded mapping scheme.

Lin et al. disclose a delay-encoded mapping scheme in Fig. 2 where a plurality of bits are used to represent a transmitted symbol.

It would have been obvious to one of ordinary skill in the art to use the delay encoded scheme of Lin et al. in the system of Decker et al. because such coding allows for increased transmission reliability (col. 1, lines 5-19, line 64 to col. 2, line 12).

Conclusion

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David B. Lugo whose telephone number is 571-272-3043. The examiner can normally be reached on M-F; 9:30-6.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jay Patel can be reached on 571-272-2988. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

David Lugo
4/26/06

JAY K. PATEL
SUPERVISORY PATENT EXAMINER